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PUBLIC SEWAGE TREATMENT PLANT CONSTRUCTION

Public Health Service
Washington, D. C.

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PUBLIC HEALTH SERVICE
Bureau of State Services
Division of Sanitary Engineering Services
Water Supply and Water Pollution Control Program

Washington : 1957

PUBLIC SEWAGE TREATMENT PLANT CONSTRUCTION - 1956

Introduction

In 1956 the Congress enacted a new Federal Water Pollution Control Act. As a result of the extensive hearings which preceded its passage, the House Committee on Public Works felt that the national water pollution problem could not be solved without some financial assistance to stimulate construction of treatment works.

Accordingly, a construction grant authorization was inserted in the bill. As enacted, it provides for the appropriation of $50 million each year, up to an aggregate of $500 million, for grants to any State, municipality, or intermunicipal or interstate agency for the construction of treatment works. Individual grants for any project cannot exceed 30 per cent of the estimated reasonable cost of the project or $250,000, whichever is smaller. Also, 50 per cent of the funds appropriated for any fiscal year must be used for grants to municipalities of 125,000 population or under.

The first grant offer under the new Act was not made until December 1956. Insufficient time has passed to determine the effects of this grant program on the construction of public sewage treatment plants.

Contracts Awarded in 1956

During 1956, $354.3 million worth of contracts for the construction of sewage treatment works were awarded by municipalities * in the United States. Of this amount, contracts totalling $314.7 million are identified as to specific location and type of project in this report. The balance of $39.6 million consists, in part, of some small contracts not identifiable from records in the State health department offices, and, in part, of "mixed" contracts for water works, collecting sewers, and treatment plants, of which a part has been apportioned to sewage treatment plants. This report and all the tables included in it relate only to the identified contracts amounting to $314.7 million.

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* Includes incorporated or unincorporated municipalities; other legal bodies as sanitary districts, counties, towns; significant institutions, resorts, recreational centers, or other population centers, and industries discharging sanitary sewage wastes directly to watercourse.

The $314.7 million volume includes 720 identified contracts, and is the highest such value on record. It includes five contracts amounting to $78 million for one of the largest single projects ever recorded. It does not reflect the anticipated effect of the Federal grant program under Public Law 660, since this provision of the law did not come into full operation until late in the year. Grant offers were made for only nine projects under this law before December 31, 1956.

Of the $314.7 million involved in those projects actually identified by the States, $113.7 million was awarded for 348 new treatment plants. The number of new plants is down 6.2 per cent from 1955, but the dollar value is 31 per cent higher. The balance of the $314.7 million, or $201.0 million, went for 372 projects for the construction of outfall and interceptor sewers, and enlargements and alterations of existing plants. The number of such projects was about the same as in 1955, but the dollar volume was 76.2 per cent greater. The percentage division between new plant and other, in terms of dollars, was 36-64 in 1956, compared with 43-57 in 1955. Sanitary collecting sewers and storm sewers are not included in this report since their construction does not represent a reduction in pollution to natural watercourses.

Construction by Drainage Basin

Table I presents the numbers and amounts of contracts awarded, broken into the 15 major drainage basins of the United States. In all but three, the dollar volume is greater than that of the previous year. The number of contracts increased in 7, declined in 6, and remained the same in 2. From 1952 to 1955 inclusive, the North Atlantic basin consistently had the largest number and largest dollar volume. In 1956, however, the Ohio basin, while not increasing the number of contracts, took the lead in both number and money. Five of these contracts accounted for the large project of $78 million mentioned above. If these are subtracted, the Ohio basin still leads in the number and amount of sewage treatment works construction put under contract in the year. This one project in Allegheny County, Pennsylvania, consisted of one contract for $16 million for a new plant and four contracts for $62 million for interceptors. This one project makes the contracted expenditure in the basin in 1956 over three and one-half times what it was in 1955. Eliminating this project, expenditure in the rest of the basin is still half again larger than 1955. Relative increases larger than this were reported for the Southwest-Lower Mississippi, California, and Pacific Northwest basins.

TABLE I

SEWERAGE CONSTRUCTION-CONTRACT AWARDS 1956*
BY DRAINAGE BASIN AND TYPE OF CONSTRUCTION
(All costs in thousands of dollars)

Drainage Basin	Total		New Plants		Other Projects**	
	No.	Cost	No.	Cost	No.	Cost
UNITED STATES	720	$314,706	348	$113,730	372	$200,976
Northeast	58	12,621	25	4,827	33	7,794
North Atlantic	86	48,385	29	14,790	57	33,595
Southeast	64	20,962	34	13,428	30	7,534
Tennessee	12	3,366	9	2,818	3	548
Ohio	99	135,435	41	40,385	58	95,050
Lake Erie	18	7,951	8	2,124	10	5,827
Western Great Lakes	56	22,348	25	10,654	31	11,694
Upper Mississippi	65	9,222	27	3,874	38	5,348
Missouri	70	7,493	54	4,694	16	2,799
Southwest Lower Miss.	73	12,636	45	6,193	28	6,443
Western Gulf	22	4,346	13	3,527	9	819
Colorado	12	3,108	5	1,697	7	1,411
Great Basin	5	1,373	2	212	3	1,161
California	43	20,656	9	1,847	34	18,809
Pacific Northwest	37	4,804	22	2,660	15	2,144

* Includes only contracts identified by location and type of construction.

** Interceptors, outfalls; additions, enlargements, and alterations to plants, etc.

Construction Contract Awards by Population Groups

An examination of the number of contracts, distributed by size of population to be served, as shown in Table II and compared with earlier years, reveals no marked change since 1952. More than half the number of contracts were for projects to serve populations of less than 5,000. From 1952 to 1955 inclusive, such projects accounted for 15 to 22 per cent of the dollar volume. In 1956, more than half the contracts took up only 11 per cent of the total. This apparent distortion is brought about again by the $78 million project, for if it is removed from consideration, those contracts for populations under 5,000 account for 15.1 per cent of the dollars, which is within the range of other years.

The effect of this large project on distribution is more noticeable in the data for projects other than new plants. From 1952 to 1955, 50 per cent of those projects have been for populations under 10,000, and also accounted for 15 to 22 per cent of the money. In 1956, the median size of the population served for this type of construction was slightly over 10,000, but these 50 per cent accounted for only 10 per cent of the money. Disregarding the large project, the population doesn't change substantially, but those contracts account for 15 per cent of the dollars, again within the range of past years.

TABLE II

SEWERAGE CONSTRUCTION-CONTRACT AWARDS - 1956*
BY POPULATION GROUPS & TYPE OF CONSTRUCTION
(All costs in thousands of dollars)

POPULATION SERVED GROUPS	TOTAL For Range No.	TOTAL For Range Cost	TOTAL Cumulative% No.%	TOTAL Cumulative% Cost%	NEW PLANTS For Range No.	NEW PLANTS For Range Cost	NEW PLANTS Cumulative% No.%	NEW PLANTS Cumulative% Cost%	OTHER PROJECTS** For Range No.	OTHER PROJECTS** For Range Cost	OTHER PROJECTS** Cumulative% No.%	OTHER PROJECTS** Cumulative% Cost%
TOTAL	720	314,706			348	113,730			372	200,976		
Less than 1,000	132	8,066	18	3	100	5,986	29	5	32	2,080	9	1
1,000 - 2,500	158	14,284	40	7	97	9,533	57	14	61	4,751	25	3
2,500 - 5,000	91	12,436	53	11	55	9,199	72	22	36	3,237	35	5
5,000 - 10,000	82	21,925	64	18	39	11,219	84	32	43	10,706	46	10
10,000 - 25,000	79	25,514	75	26	29	13,786	92	44	50	11,728	60	16
25,000 - 50,000	32	20,641	80	33	12	10,428	95	53	20	10,213	65	21
50,000 - 100,000	28	26,419	84	41	7	19,221	97	70	21	7,198	71	25
100,000 - 250,000	35	28,213	88	50	4	8,372	99	77	31	19,841	79	35
250,000 - 500,000	39	38,254	94	62	1	6,500	99	83	38	31,754	82	51
500,000 - 1,000,000	19	18,445	97	68	2	3,775	99	86	17	14,670	94	58
1,000,000 or over	25	100,509	100	100	2	15,711	100	100	23	84,798	100	100

* Includes only contracts identified by location and type of construction.

** Interceptors, outfalls; additions, enlargements, and alterations to plants, etc.

Contract Awards by Size of Contract

A distribution of contract awards by size of contract for 1956 is shown in Table III. A comparison is readily available only for this year and last. The exact 50 per cent level is not known, but in both years 48 per cent of all contracts were under $100,000. These contracts accounted for only 7.5 per cent of the total value in 1955 and 4.7 per cent in 1956. For new plants, contracts under $100,000 accounted for 8.1 per cent of the volume in 1955 and 6.9 per cent in 1956, whereas in "other projects" it was 7.0 per cent in 1955 and just half of that, 3.5 per cent, in 1956, again reflecting the interceptor portion ($62 million) of that one large project. This project shows its effect in another way. In 1955, 50.4 per cent of the dollar volume for "other projects" was in contracts under $1 million. In 1956, only 28.8 per cent was under $1 million

TABLE III

SEWERAGE CONSTRUCTION-CONTRACT AWARDS - 1956*
BY COST GROUPS & TYPE OF CONSTRUCTION
(All costs in thousands of dollars)

CONTRACT COST GROUPS	TOTAL For Range No.	TOTAL For Range Cost	TOTAL Cumulative% No.%	TOTAL Cumulative% Cost%	NEW PLANTS For Range No.	NEW PLANTS For Range Cost	NEW PLANTS Cumulative% No.%	NEW PLANTS Cumulative% Cost%	OTHER PROJECTS** For Range No.	OTHER PROJECTS** For Range Cost	OTHER PROJECTS** Cumulative% No.%	OTHER PROJECTS** Cumulative% Cost%
TOTAL	720	314,706			348	113,730			372	200,976		
Less than 10	52	287	7.2	.1	26	143	7.5	.1	26	144	7.0	.1
10 - 25	71	1,259	17.1	.5	36	628	17.8	.7	35	631	16.4	.4
25 - 50	88	3,196	29.3	1.5	40	1,470	29.3	2.0	48	1,726	29.3	1.2
50 - 100	134	10,193	47.9	4.7	73	5,574	50.3	6.9	61	4,619	45.7	3.5
100 - 250	163	26,146	70.6	13.1	78	12,386	72.7	17.8	85	13,760	68.5	10.4
250 - 500	106	34,389	85.3	24.0	54	16,242	88.2	32.0	52	18,147	82.5	19.5
500 - 1,000	49	33,157	92.1	34.5	22	14,452	94.5	44.8	27	18,705	89.8	28.8
1,000 or over	57	206,079	100.0	100.0	19	62,835	100.0	100.0	38	143,244	100.0	100.0

* Includes only contracts identified by location and type of construction.

** Interceptors, outfalls; additions, enlargements, and alterations to plants, etc.

Construction Record 1948-1956

To provide comparisons between 1956 and earlier years, the actual dollar volume of contracts awarded during each of the past nine years as shown in Column 2 of Table IV, has been adjusted in Column 3 to reflect 1955 dollars.

TABLE IV

SEWERAGE CONSTRUCTION - CONTRACT AWARDS

1948 - 1956

YEAR	CONTRACT AWARD VALUE Actual Dollars (Millions)	1955 Dollars** (Millions)
1948	158*	226
1949	180*	250
1950	203*	262
1951	177*	216
1952	137	159
1953	191	210
1954	228	239
1955	201	201
1956	315	300
	Total - - -	2,063
	Average - -	229

* Based on records maintained by U. S. Department of Commerce, Facilities and Construction Bureau.

** Engineering News Record Construction Cost Index used to translate actual dollar value to 1955 dollars.

Source

The basic data upon which this report is based were obtained from:

(a) F. W. Dodge Corporation daily reports on sewage treatment plant and interceptor sewer contract awards in 37 eastern States.

(b) Construction Daily Reports, McGraw-Hill, New York.

(c) Construction news periodicals, such as the Pacific Builder and Architect, Rocky Mountain Construction News Bulletin, Southwest Builder and Contractor.

A list of projects for each State was compiled and sent to the State water pollution control authority for examination, correction, and return.

References

(1) Public Sewage Treatment Plant Construction 1952, PHS Pub. 291

(2) Public Sewage Treatment Plant Construction 1953, PHS Pub. 409

(3) Public Sewage Treatment Plant Construction 1954, PHS Pub. 453

(4) Public Sewage Treatment Plant Construction 1955, PHS Pub. 488

(5) Water Pollution in the United States, PHS Pub. 64 (1951)

APPENDIX

SEWAGE TREATMENT PLANT CONSTRUCTION CONTRACTS AWARDED DURING THE YEAR 1956

STATE AND PLACE*	TYPE OF CONSTRUCTION	COST
ALABAMA		
Anniston	New Plant	$1,455,657
Fairfield Village	Outfall	61,761
Guntersville	New Plants(2)	330,972
Huntsville	Outfall	50,587
Mobile	Outfall	398,473
	New Plant	2,760,580
Monroeville	Improvements	101,475
	Total	5,159,505
ARIZONA		
Flagstaff	Outfall	144,010
	New Plant	278,091
Tempe	Additions	272,326
	Total	694,427
ARKANSAS		
Booneville	New Plant	62,477
Little Rock-Cloverdale Sub-Div.	New Plant	65,000
	Total	127,477
CALIFORNIA		
Barstow Marine Corps Supply Center	Addition	21,398
Cardiff	Oxidation Pond	94,800
Cloverdale	New Plant	204,380
Coronado Amphibious Base	Improvements	6,000
Del Mar San. Comm.	Improvements	4,000
Del Roca - Pumalo Elem. School	New Plant	2,997
Fletcher Hills	Improvements	2,000
Fontana	Interceptors	284,068
	New Plant	239,668
	Outfall	166,500
Garden Grove San. Dist.	Interceptors	49,700
Half Moon Bay	Improvements	8,000**
Hermosa Beach	Improvements	2,450
Los Angeles City-		
Mason Avenue	Interceptor	69,560
Wilbur Avenue	Interceptor	52,652
Los Angeles	Interceptor	96,708
	Addition	82,636
	Improvements	95,721
	Outfall	6,196,691
	Outfall	2,529,044
	Interceptor	239,933
	Outfall	4,930,000
Los Angeles Co. San. Dist. #2	Outfall "F"	294,028
	Outfall "F"	314,705
	Outfall "F"	132,289
	Outfall "F"	170,221
	Treatment Plant	19,956
Wayside Honor Rancho Castaic	Improvements	104,900
Marin Co. San. Dist. #6	Enlargements	360,199
Norton Air Force Base	New Plant	480,000
Ontario	Outfall	351,864
Orange County	Improvements	11,000
	Additions	287,000
	Additions	41,000
CALIFORNIA (Cont.)		
Palo Alto	Improvements	$ 520,000
Riverside	Additions	83,860
San Diego	Improvements	90,000
San Diego Co. Spring Valley San. Dist.	New Plant	291,300
San Francisco Naval Shipyard	Interceptor	1,146,000
Tehachapi - Calif. Inst. for Men	Additions	41,888
U. S. Navy- Tiburon Net Depot, Pt. Molate Fuel Depot, Skaggs Is. Radio Station	New Plant	414,570
West Covina	Outfall	23,395
Western Pacific San. Co. - San Bernardino Co.	New Plant	200,000**
Yountville San. Dist.	New Plant	99,448
	Total	20,856,529
COLORADO		
Boulder	Outfall	130,280
	New Plant	783,964
Buena Vista	Lagoons	15,429
Canon City	New Plant	267,817
	New Plant	285,000
Colorado Springs No. Suburban S.D.	Additions	198,643
Denver	Additions	367,000
Derby	New Plant	518,332
Erie	Lagoon	12,476
Fleming	Lagoon	8,900
Frederick	Lagoons	23,132
	Total	2,610,973
CONNECTICUT		
Middletown	Interceptor	37,610
Milford - Meadows	New Plant	50,985
Milford	New Plant	110,000
New Canaan	Improvements	89,685
Old Lyme High Sch.	Addition	5,373
Plymouth - Plymouth Center Sch. Site	Lagoon	16,203
Rocky Hill	New Plant	240,500
Rocky Hill & Wethersfield	Outfall	109,520
Thomaston	New Plant	14,200
Waterbury - Steels Brook	Interceptor	68,215
West Hartford	Interceptor	58,504
	Interceptor	44,672
	Total	845,867
DELAWARE		
Newark	Outfall	72,774
	Total	72,774
DISTRICT OF COLUMBIA	Addition	6,533,000
	Total	6,533,000

STATE AND PLACE*	TYPE OF CONSTRUCTION	COST
FLORIDA		
Clearwater	New Plant	$ 167,200
DeFuniak Springs	New Plant	188,594
Duval Co. -		
Schools #87 & #90	New Plant	38,146
School #93	New Plant	35,600
School #155	New Plant	21,500
Eglin A. F. Base	Addition	78,379
Ft. Myers	Outfall	124,115
	New Plant	378,000
Havana	New Plant	109,000
Palm Beach	Outfall	823,770
Sarasota	Improvements	124,814
West Palm Beach	New Plant	719,177
	Total	2,808,295
GEORGIA		
Atlanta	Outfall	56,766
	Outfall	26,209
Chattahoochee River Industrial Area	Improvements	204,000
Hopeville	Outfall	123,500
Utoy Creek	Improvements	512,575
Buchanan	New Plant	119,000
Marietta	Outfall	324,964
	New Plant	491,540
Savannah - Windsor Forrest	New Plant	85,000
Thomasville	Addition	340,000
Valdosta	Extension	204,987
Warm Springs	New Plant	75,000
	Total	2,563,541
IDAHO		
Arco	New Plant	76,460
Boise	Interceptor	25,156
Caldwell	Interceptor	220,000
	New Plant	510,000
Ft. Hall Indian Agency	Lagoon	6,000
Meridian	New Plant	158,665
	Interceptor	40,000
		1,036,281
ILLINOIS		
Bartlett	Additions & Alterations	6,761
Byron	Alterations	11,100
Calumet City	Addition	129,000
Chicago (West) - S.W. Trt. Works	Alterations	214,900
Cook Co. - Village of Summit-Lyons & McCook	Interceptor	448,772
Decatur - Div. N	Additions	156,373
Elgin	Interceptor	75,338
	Improvements	244,000
Farmington	Improvements	176,200
Flossmoor	Addition	204,987
Geneva	Addition & Alterations	248,000
Great Lakes Naval Training Center	Improvements	16,945
Hutsonville	New Plant	30,000
Kirkland	New Plant	97,400
Lake County	Interceptor	796,336
Lockport	New Plant	372,482
McHenry	Addition & Alterations	277,990

STATE AND PLACE*	TYPE OF CONSTRUCTION	COST
ILLINOIS (Cont.)		
Manteno State Hosp.	Addition	135,900
Metropolitan San. Dist. - Cook Co.	Interceptors	1,687,050
Morton - Roth Addn.	New Plant	200,904
	Interceptors	178,116
Morton Grove & Niles	Interceptor	1,382,325
North Chicago	Addition & Alterations	318,879
Paris	Improvements	14,000
Plano	Improvements	114,000
Roselle	Improvements	144,750
Sandwich	Addition & Alterations	96,921
Savanna	New Plant	185,700
Stickney & Forest View	Interceptor	145,910
Sycamore	Addition	50,545
Waterloo	Improvements	128,114
Watseka	New Plant	336,320
West Chicago	Interceptor	197,058
West Deerfield Township	New Plant	1,561,623
Winnebago	New Plant	46,902
	Total	10,431,601
INDIANA		
Aurora	New Plant	255,917
Cloverdale - Cagles Mill State Park	New Plant	23,700
Dunkirk	New Plant	207,040
Fort Wayne-Liberty Hill Subdivision	New Plant	27,102
Gary	Interceptor	3,646,952
Greenwood	New Plant	264,347
Indianapolis	Improvements	6,915
	Interceptor	880,000
	Addition	531,400
	Additions	643,400
	Addition	797,000
	Interceptor	2,412,000
Belmont Ave.	Interceptor	4,146,000
Crooked Creek Sch.	New Plant	17,640
Fall Creek - Meridian Hills	Interceptor	1,679,000
Fall Creek - Arlington Ext.	Interceptor	575,000
Lick Creek	Interceptor	5,059,325
Mars Hill	Interceptor	16,500
Pleasant Run - East Branch	Interceptor	528,000
Marion Co.- Southern Estates Inc.	New Plant	30,000
New Whiteland	Improvements	100,845
Portland	New Plant	548,700
Salem	Alterations	97,065
San Pierre - Calvary Hospital	New Plant	60,345
Seymour	Outfall & Interceptor	1,469,000
	New Plant	443,228
Smith-Estab Memorial Hosp. (Wayne Co.)	New Plant	19,950
Tell City	New Plant	262,900
Warren Township - School #12	New Plant	29,000
	Total	24,776,271

STATE AND PLACE*	TYPE OF CONSTRUCTION	COST
IOWA		
Aurelia	Replacement	$ 65,939
Chariton	New Plant	191,087
Des Moines	Improvements	22,960
Fayette	Improvements	85,163
Grimes	New Plant	65,306
Keota	Replacement	53,475
Lake City	Improvements	56,297
Miles Consolidated School - Miles	Additions	9,711
Mount Ayr	New Plant	84,095
Odebolt	Outfall	5,427**
	Replacement	97,000**
Rockwell City	Replacement	133,548
Solon	New Plant	62,189
	Total	932,197
KANSAS		
Belle Plaine	New Plant	92,400
Bonner Springs	New Plant	153,555
Brewster	Improvements	16,800
Colwich	New Plant	69,600
El Dorado	New Plant	552,000
Elk City	Improvements	27,960
Fort Dodge - Old Soldiers' Home	New Plant	51,695
Garfield	New Plant	37,234
Girard	Alterations & Addition	87,500
Greensburg	Additions	90,000
Kansas Turnpike	New Plants (6)	460,041
Lewis	New Plant	35,000
Liberal	Additions	188,412
Lyndon	New Plant	53,570
Mission Township - San. Dist. #1	Additions	581,000
San. Dist. #2	Lagoon	46,505
Moundridge	Additions	90,600
Newton	Improvements	34,700
Nortonville	New Plant	73,000
Olathe	Improvements	1,104,262
Pretty Prairie	New Plant	70,000**
Sedan	New Plant	96,000
Topeka	Interceptor	84,751
Towanda	New Plant	64,800
Valley Center	New Plant	36,450
	Outfall	18,148
Valley Falls	New Plant	161,908
Wamego	New Plant	135,882
	Total	4,513,773
KENTUCKY		
Cynthiana	New Plant	274,912
Hopkinsville	Additions	385,125
Jefferson Co. - Johnstown Rd. Sch.	New Plant	20,950
Miles Lane Sch.	New Plant	29,000
Jeffersontown	Outfall	26,967
	New Plant	340,004
Louisville	New Plant	6,500,000
	Interceptor	997,000
Madisonville	Outfall	311,868
	New Plant	589,975
Owensboro	New Plant	1,763,686
	Interceptor	626,680
	Total	11,866,167

STATE AND PLACE*	TYPE OF CONSTRUCTION	COST
LOUISIANA		
Air Reserve Trng. Center - Alvin Callendar Air Air Field - Belle Chasse	New Plant	$ 277,964
Chalmette-Meraurville-Violet	Outfall & Interceptors	1,226,000
Jefferson Parish	New Plant	822,000
Patterson	New Plant	95,707
Pineville - La.State Industrial School for Girls	New Plant	32,000
Rayne	Alterations & Additions	215,500
Scott	New Plan	72,420
Shreveport	Outfall	1,314,263
	Outfall	20,767
Vivian	New Plant	99,991
	Total	4,176,612
MAINE		
Pownal	New Plant	67,777
	Total	67,777
MARYLAND		
Baltimore	Addition	112,643
Baltimore Co.	Interceptor	47,301
	Interceptor	152,876
	Outfall	16,794
	Additions	321,707
Cromwell Valley	Interceptor	68,955
Scotts Level Br.	Interceptor	63,623
Stemmers Run & Brien Run	Interceptor	281,272
Cambridge	Improvements	78,409
Ferndale & Glen Burnie	Interceptor	490,939
Glen Burnie - Cox Creek	Outfall	823.584
	New Plant	526,640
Hyattsville (WSSC)	Interceptors	283,600
Montgomery Co.	Interceptor	229,749
Perry Hall	Outfall	23,937
	Outfall	34,375
Prince George's Co.	Outfall	65,255
	Outfall	210,809
Reisterstown	Outfall	15,295
	Total	3,847,763
MASSACHUSETTS		
Abington	Addition	4,500
Charlton	New Plant	49,000
	Interceptor	10,000
Danvers	Interceptor	52,600
Deerfield	New Plant	61,950
East Longmeadow	Improvements	47,316
Franklin	Enlargements	85,900
Gardner State Hosp.	Additions & Alterations	66,740
Hingham	Interceptor	134,570
Ipswich Elem. School	New Plant	25,000
Lanesborough	New Plant	20,359
Lunenburg	New Plant	33,329
Reading	Interceptor	75,000

STATE AND PLACE*	TYPE OF CONSTRUCTION	COST
MASSACHUSETTS (Cont.)		
Scituate Elem. Sch.	New Plant	$ 33,121
Southbridge	New Plant	407,671
	New Plant	98,338
Tewksbury State Hosp. & Infirmary	New Plant	150,435
Wareham High School	New Plant	26,000
West Springfield	Interceptors	300,000
Weston Regis College	Addition	77,000
Wrentham State Sch.	New Plant	112,645
	Total	1,871,474
MICHIGAN		
Armada	New Plant	124,018
Hlissfield	New Plant	228,875
	Interceptors	178,900
Buchanan	Outfall	35,370
Caro	Replacement	209,000
Caro State Hosp.	Improvements	60,800
Clinton Township	Outfall	144,480
	Addition	277,306
Clinton & Erin Townships	New Plant	379,626
Croswell	New Plant	223,900
	Interceptor	224,832
Farmington	Interceptor	245,473
Flint	Interceptor	41,824
Grand Rapids	Addition	49,875
	Enlargement	524,895
Holland	Improvements	43,250
Holly	New Plant	260,000
Imlay City	New Plant	212,650
Leslie	New Plant	158,604
	Interceptor	112,488
Manchester	New Plant	142,200
Melvindale	Interceptor	15,237
New Haven	New Plant	191,841
Rosecommon	New Plant	134,000
St. Johns	New Plant	263,499
Standish	New Plant	162,348
Vicksburg	New Plant	148,485
Warren Township	New Plant	5,160,000
Winchester	New Plant	150,000
	Total	10,103,776
MINNESOTA		
Brandon	New Plant	29,000
Cloquet	Interceptor	336,044
	New Plant	338,865
Dassel	New Plant	81,683
Dodge-Center	New Plant	142,840
Elbo Lake	New Plant	127,000
	Interceptor	32,000
Gilbert	New Plant	184,000
	Interceptor	34,000
International Falls	New Plant	301,370
Lester Prairie	New Plant	90,799
Lewiston	Addition & Alterations	29,233
Mankato	Interceptor	94,828
	New Plant	930,925
	Total	2,752,587
MISSISSIPPI		
Bay Springs	Lagoon	17,383
Boonville	Outfall	6,278
	New Plant	107,816

STATE AND PLACE*	TYPE OF CONSTRUCTION	COST
MISSISSIPPI (Cont.)		
Fulton	New Plant	$ 65,150
Houston	Lagoon	40,380
Oxford	New Plants(2)	224,530
Prentiss	Lagoon	5,753
Raymond	Lagoon	5,487
	Total	472,777
MISSOURI		
Appleton City	Lagoon	2,600
Belton	New Plant	145,000
Butler	Lagoon	25,000
Carl Junction City	Lagoon	14,850
Carrollton	New Plant	264,557
Fayette	Lagoons	22,818
Harrisonville	New Plant	116,227
Whitman Air Force Base - Johnson Co.	New Plant	493,360
Lebanon	New Plant	224,100
Marshall - Missouri State Sch.Grounds	New Plant	117,864
O'Fallon	New Plant	80,000
	Outfall	6,000
Sheldon	Lagoon	5,843
Stover	Lagoons	10,443
Trenton	New Plant	302,829
Union	Lagoon	63,625
Wellsville	Lagoon	16,935
	Total	1,912,051
MONTANA		
Hingham	Lagoon	63,569
	Total	63,569
NEBRASKA		
Clarks	New Plant	44,690
Douglas Co. - San. Dist. #20	New Plant	47,164
Eagle	New Plant	25,000
Elmwood	New Plant	24,000
Gibbon	Lagoon	4,720
Glenville	Lagoon	4,225
Johnson	Lagoon	7,465
Omaha	Outfall	19,760
Potter	Lagoon	25,500
Offutt Air Force Base - Sarpy Co.	Alterations	30,800
York	Enlargements	87,840
	Total	321,164
NEVADA		
Boulder City	Addition	36,000
Las Vegas	Outfall	860,933
	New Plant	1,109,969
McDermitt	Lagoon	12,000
	Total	2,018,902
NEW JERSEY		
Beach Haven	New Plant	196,906
	Outfall	75,775
Brigantine	New Plant	272,597
Camden	Interceptor	464,850
Clayton	New Plant	367,875
Delaware Township	Addition	85,000
Elizabeth	Interceptors	1,359,647
Freehold Township School	New Plant	6,152

STATE AND PLACE*	TYPE OF CONSTRUCTION	COST
NEW JERSEY (Cont.)		
Gloucester Township	New Plant	$ 90,000
Greenwich Township	Addition	38,280
Hoboken	New Plant	7,700,000
Island Heights	Additions & Alterations	129,421
Livingston	Additions & Alterations	400,000**
Newark	Improvements	355,892
New Jersey State Hospital	Additions	145,780
North Arlington & Twp. of Lyndhurst	New Plant	415,371
Passaic Valley Sewerage Comm. - Newark	Enlargement	5,727,683
Paterson	Improvements	2,200,000
Red Bank	New Plant	354,105
Stratford	New Plant	100,000
Wenonah	New Plant	116,888
	Total	20,602,222
NEW MEXICO		
Crownpoint	New Plant	10,000
Fort Sumner	New Plant	113,640
Gallup	Interceptor	73,706
Toadlena	Addition	5,000
	Total	202,346
NEW YORK		
Babylon High Sch.	New Plant	54,000
Cayuga Heights	New Plant	634,865
Dunkirk	Addition & Alterations	572,228
East Greenbush	New Plant	172,700
Floyd Bennett Naval Air Field - Brooklyn	Improvements	29,600
Henrietta	Addition	49,345
	Addition	411,066
	Enlargement	450,000
Hilton	New Plant	65,000
Interlaken	New Plant	65,000
Lackawanna	New Plant	1,495,750
New Rochelle	Interceptor	485,630
	Alterations	4,252
	Interceptor	460,587
Owego	New Plant	300,000**
Pilgrim State Hospt.- West Brentwood	Addition	66,826
Poland	New Plant	1,211,907
Poughkeepsie	New Plant	240,000**
	Interceptor	383,000
	Outfall	40,000
State Hospital	Improvements	15,944
Warwick - New York Training School for Boys	Enlargement	24,799
Wingdale - Harlem Valley State Hosp.	Improvements	167,250
Yonkers	Addition	3,210,980
	Interceptors	1,280,757
	Total	11,891,486
NORTH CAROLINA		
Camp LeJeune	Improvements	30,360
Durham	Improvements	1,008,542
Gaston County Home	New Plant	14,266
Greensboro	Outfall	$ 393,914
South Buffalo Creek	Additions	1,195,930
Hickory	Outfall	64,564
Lenoir	Outfall	4,540
Lexington	New Plants(2)	757,852
Matthews	New Plant	46,200
Morganton	New Plant	455,754
	Outfall	273,797
Pembroke	New Plant	55,645
Reidsville	Outfall	98,256
	Additions	63,525
	New Plant	806,261
Sanford	Outfall	17,578
	New Plant	96,400
Shelby	Outfall	429,830
Winston-Salem	Outfall	153,241
	New Plant	110,880
	New Plant	3,508,040
	Total	9,585,375
NORTH DAKOTA		
Adams	Lagoon	2,767
Bowman	Lagoon	4,194
	Outfall	27,945
Devil's Lake	Addition	145,469
Edinburg	Lagoon	7,704
Garrison	Lagoon	12,591
Golden Valley	Lagoon	8,000
Souris	Lagoon	4,560
Turtle Lake	Lagoon	13,000
	Lagoon	15,800
	Total	242,030
OHIO		
Ada	New Plant	213,450
Bremen	New Plant	57,897
Brunswick Township-Medina - S.D. #3	New Plant	83,432
Buckeye Lake	New Plant	334,614
Butler	New Plant	40,331
Campbell	New Plant	637,012
Canfield	Addition	249,331
Cincinnati	Interceptor	1,274,000
	Interceptor	1,282,540
	Interceptor	793,190
East Branch, Ohio River	Interceptor	2,145,585
Eggleston Ave.	Interceptor	321,445
Mill Creek Plant	New Plant	3,483,480
Cleveland	Interceptor	415,474
Columbus	Improvement	1,647,931
Covington	Improvements	116,019
Delta	New Plant	183,529
Eastlake	New Plant	1,010,064
East Liverpool	New Plant	775,043
Eaton	Improvements	44,770
Fairport	New Plant	202,026
Glendale	Alterations	58,216
Grafton	New Plant	163,800
Greenfield	Addition	153,126
	Outfall	56,012
Hamilton Co. - Sycamore Sewer Dist.	New Plant	364,474
Hilliards	New Plant	304,647

STATE AND PLACE*	TYPE OF CONSTRUCTION	COST
OHIO (Cont.)		
Jamestown	Addition & Alterations	$ 70,757
Jefferson	Replacement	124,804
Lebanon	Enlargement	79,500
McDonald	Interceptor	32,205
Middlefield	Improvements	28,000
Middletown	Interceptor	510,670
Mt. Gilead	New Plant	220,241
New Carlisle	Enlargement	177,774
Piqua	New Plant	1,090,308
	Interceptor	303,945
Springfield Township	New Plant	112,765
Sylvania	New Plant	197,564
	Interceptor	29,565
Tiffin	Interceptor	27,876
Toledo - Bayview Park Plant	Improvement	4,018,290
Toledo	Additions	682,042
Trotwood	Enlargement	253,770
Twinsburg	New Plant	333,814
Upper Sandusky	New Plant	235,199
Vermilion-On-The-Lake	New Plant	6,264
Wapakoneta	Enlargement	216,429
Youngstown	Interceptor	203,847
	Total	25,367,067
OKLAHOMA		
Altus Air Force Base	Alterations	5,440
Carnegie	Improvements	49,000
Conner College	Lagoon	25,000
Davenport	Lagoon	5,429
Drumright	Improvements	9,344
	New Plant	112,800
Duncan	Lagoon	20,000
Hartshorne	Improvements	44,749
Jones Academy	Lagoon	18,860
Healdton	New Plant	81,700
Marietta	New Plant	75,000
Maysville	Lagoon	37,000
Midwest City	Outfall	238,214
	New Plant	308,004
Muskogee - Davis Air Field Plant	Enlargements	26,745
Oklahoma Co.	New Plant	113,140
	Additions	22,000
Stratford	Lagoon	49,000
Stroud	Additions	24,450
	Lagoon	6,600
Tulsa	Outfall	100,350
	Addition	357,690
	Interceptor	992,440
	New Plant	1,112,440
Vinita	New Plant	128,100
Walters	New Plant	70,000
	Total	4,033,495
OREGON		
Glendale	New Plant	66,788
Harrisburg	New Plant	52,113
Jesuit High School	New Plant	17,000
Portland	Interceptor	120,500
Whitford-McKay S.D.	New Plant	54,025
Prairie City	New Plant	98,000
Raleigh San. Dist.	New Plant	53,572
Springfield	Addition	5,524
Tigard San. Dist.	New Plant	$ 94,000
Winston	New Plant	128,451
	Total	689,973
PENNSYLVANIA		
Allegheny Co.	New Plant	15,690,965
	Interceptor	22,967,951
	Interceptor	27,889,921
	Interceptor	1,372,050
	Interceptor	9,849,859
Blairsville	Interceptor	359,391
Bloomsburg	Outfall	17,045
Claysburg Air Force Station	New Plant	61,500
Derry	Addition & Alterations	214,980
East Berlin	New Plant	93,128
Edinboro	Addition & Alterations	108,750
Embreeville State Hospital	Enlargement	149,747
Erie	Improvement	34,000
Hanover	Alterations & Additions	850,700
Hickory Township	New Plant	332,036
Lower Moreland Township High Sch.	New Plant	65,900
Mill Hall	Interceptor	47,468
Mt. Joy	New Plant	339,522
North East	Addition & Alterations	250,000**
Owen Roberts Jr. & High School	New Plant	47,990
Philadelphia	Interceptor	1,138,103
	Interceptor	26,000
	Interceptor	113,521
	Interceptor	15,175
	Interceptor	86,500
Sharon	New Plant	386,315
Slatington	Addition	80,000
Spring Grove	New Plant	506,475
Titusville	Interceptor	97,190
West Mifflin Boro	Addition	33,607
	Total	83,225,789
RHODE ISLAND		
Newport - Naval Station, Coddington Cove	Interceptor	179,000
Melville	Interceptor	97,000**
	New Plant	123,000**
Midway Landing	Interceptor	7,000**
	New Plant	1,000**
Providence-Fields Point	Improvements	3,135,000
	Improvements	509,440
Quonset Point - Naval Air Station	Enlargements	105,200
	Total	4,156,640
SOUTH CAROLINA		
Beaufort - U. S. Marine Corps Aux. Field	New Plant	274,286
Dillon	New Plant	99,800
	Outfall	174,765
	Improvements	100,000

STATE AND PLACE*	TYPE OF CONSTRUCTION	COST
SOUTH CAROLINA (Cont.)		
Johnston	Outfalls	$ 19,384
	New Plant	89,392
Saluda	New Plant	96,213
Walterboro	New Plant	219,388
	Total	1,073,228
SOUTH DAKOTA		
Beresford - Bethesda Children's Home & Home for Aged	Lagoon	5,000**
Canton	Lagoon	21,994
Castlewood	Lagoon	18,000
Eagle Butte	Lagoon	8,793
Kadoka	Additions	5,501
Langford	Lagoon	3,869
Mission	Lagoon	6,500
White River	Lagoon	18,950
	Total	88,607
TENNESSEE		
Capleville	New Plant	100,000
Chattanooga	Interceptor	270,395
	New Plant	1,522,434
	Outfall	227,145
Davidson Co. Hosp.	New Plant	79,674
Decherd	New Plant	88,238
Etowah	New Plant	160,967
Henderson	Addition	92,777
Jordonia State Training School	New Plant	96,193
Knox Co.	New Plant	91,195
Knoxville - Eastern State Hospital	New Plant	125,335
Memphis	Interceptor	652,195
	Interceptor	308,491
Nashville	New Plant	3,288,000
Selmer	New Plant	96,300
Shelbyville	New Plant	400,000**
Spring City	New Plant	98,650
	Total	7,697,989
TEXAS		
Arlington	New Plant	616,816
Channelview	New Plant	39,926
Forest Hills	New Plant	134,832
Ft. Worth	Interceptor	328,239
	New Plant	1,410,377
Fredericksburg	Improvements	18,994
Ganado	Outfall	12,657
	New Plant	71,253
Harris Co. - Cloverleaf Area	Alterations & Additions	26,802
Houston	Additions	62,315
Berle St. Area	Additions	31,300
Spring Branch Area	New Plant	37,500
Hutchins	New Plant	40,269
Jefferson Co.	New Plant	44,890
Kountze	New Plant	48,292
Odessa	Interceptor	103,788
	Interceptor	174,746
	New Plant	865,972
Port Acres	New Plant	198,251
Roanoke	New Plant	20,395
Uvalde	Addition	59,720
Wilmer	New Plant	19,989
	Total	4,367,323

STATE AND PLACE*	TYPE OF CONSTRUCTION	COST
UTAH		
Moab	New Plant	$ 79,115
	Outfall	18,969
Ogden	Outfall	821,790
	Addition	214,675
	Additions	124,446
Vernal	New Plant	219,537
	Total	1,478,532
VERMONT		
Brattleboro	Interceptor	379,975
Ethan Allen Air Force Base - Winooski	New Plant	174,890
	Total	554,865
VIRGINIA		
Arlington	Addition	23,420
Arlington & Fairfax Counties	Outfall	44,084
Fairfax	New Plant	162,000
Fort Eustis	Alterations	1,373
Glasgow	New Plant	68,749
Halifax	New Plant	24,863
Lawrenceville	New Plant	198,500
	Interceptor	83,875
Lexington	New Plant	732,022
Lynchburg	New Plant	967,260
	Interceptors	2,682,389
Norfolk	Interceptor	268,174
Princess Anne Co. - Poplar Halls Sub-Div.	New Plant	119,888
Richmond	Interceptor	183,157
	Addition	1,396,275
Selma	New Plant	51,149
	New Plant	74,281
Vienna	New Plant	94,564
Warwick	Interceptor	17,214
Windy Run	Outfall	9,676
	Total	7,202,913
WASHINGTON		
Bremerton	Interceptor	637,298
Dayton	Addition	5,378
Edmonds	New Plant(Equip.)	28,800
Elma	Improvements	39,766
Ephrata	New Plant	251,666
Long Beach	Lagoon	38,985
Manson San. Dist.	New Plant	8,324
Medical Lake - Eastern State Hospital	New Plant	123,930
Montesano	New Plant	153,333
Oak Harbor	Outfall	16,498
	Interceptor	18,978
	New Plant	129,619
Othello	Outfall	26,566
Puyallup	Interceptor	14,403
Seattle - Lake City	Additions	137,155
	Enlargement	661,490
Sedro Woolley	New Plant	129,355
Tieton	Lagoon	14,541
Whidbey Island - U.S. Naval Air Station	New Plant	466,000
Yakima	Interceptor	175,665
	Total	3,077,750

STATE AND PLACE*	TYPE OF CONSTRUCTION	COST
WEST VIRGINIA		
Charleston	Interceptor	$ 399,725
	Addition	136,533
Guthrie Air Force Base	Addition	20,042
Moundsville	New Plant	650,329
Paden City	New Plant	119,250
	Interceptor	30,550
Ravenswood	Interceptors	19,232
Wheeling	Interceptors	385,757
	Total	1,761,418
WISCONSIN		
Caledonia - Caddy Vista San. Dist.	New Plant	96,000
Chetek	Replacement	109,953
Dodgeville	New Plant	207,451
Gillett	New Plant	130,557
Green Bay	Interceptor	203,467
Hawthorne	New Plant	61,497
Jefferson	Replacement	251,808
Johnson Creek	Replacement	109,882
Kewanee	New Plant	178,990
Loyal	New Plant	67,811
Manasha	Addition	100,000**
Milwaukee	Improvements	90,538
	Interceptor	206,115
	Interceptor	392,352
Met. Sewer Comm. Mil. San. Dist.	Interceptor	379,655
	Interceptor	172,840
Mishicot	New Plant	74,400
Mt. Horeb	Additions	106,583
Niagara	Plant (Equip.)	3,980
Oak Creek	Lagoon	75,544
Onalaska - School Dist. #3	Additions	3,540
Prairie Du Chien	New Plant	176,678
	Interceptor	61,612
Racine	Interceptor	384,262
Town of Sheboygan - School Dist. #1 Pigeon River	New Plant	12,323
Sheldon	New Plant	42,783
Sturgeon Bay	Additions & Alterations	175,289
Wyocena - Columbia Co. Hospital & Home	New Plant	47,157
	Total	3,922,087
WYOMING		
Buffalo	Outfall	29,649
	Lagoon	11,097
Wheatland	Lagoon	3,500
	Total	44,246
Totals for U.S.	348 New Plants	113,729,655
	372 Other	200,975,856
	720 Total	$314,705,511

* Includes incorporated or unincorporated municipalities; other legal bodies as Sanitary Districts, counties, towns; significant institutions, resorts, recreational centers, and other population centers.

** Estimated cost.

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